

VIRGINIA WILDLIFE

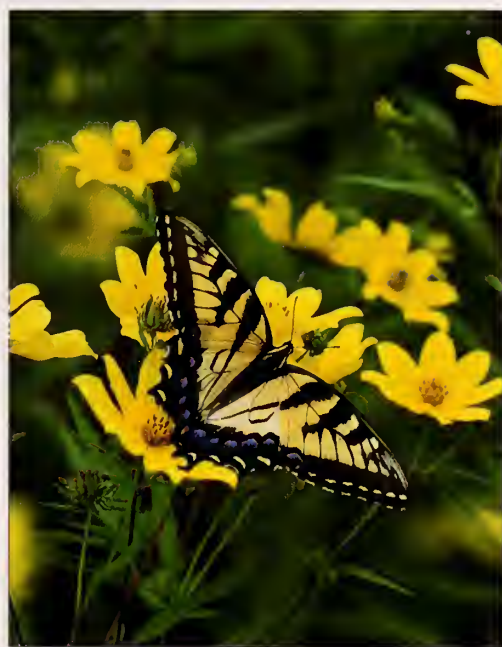
JULY 1994

ONE DOLLAR





VIRGINIA WILDLIFE



Cover: The tiger swallowtail butterfly is the perfect subject for wildlife photographers. See Lynda Richardson's column on how to make the best of such a photo opportunity on page 34; photo by Lynda Richardson. *Opposite:* The newly published *The Reptiles of Virginia* will give you the latest information on this rare and threatened wood turtle, along with all the other snakes, lizards, and turtles in Virginia. See page 8 for details; photo by Maslowski.



Try live bait this summer for big returns; see page 24 for details. Photo by Doug Stamm.

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Dedicated to the Conservation of Virginia's Wildlife and Natural Resources



RIVER OF MANY N

Dwight Dyke



Dwight Dyke

The Mattaponi is a favorite of anglers and one of the state's most pristine rivers.

by Bob Gooch

Drive north out of Richmond on old U. S. Highway 1 and as you enter Spotsylvania County from Caroline you cross the Matta River. You also cross it on busy Interstate 95, but U. S. 1 gives you a better look at the pretty little stream. Make a note of it. Continue north and you'll cross the Po River. String it after Matta on your notepad and you now have Mattapo. The Po is approximately two miles north of the Matta. Another mile or so up the highway you cross the Ni River. Add it to Mattapo and you have Mattaponi, one of the most popular yellow perch fishing

ivers in the Old Dominion. This trio of eastern Virginia streams are the major tributaries of the Mattaponi. They form its headwaters.

You have to drive north to make the name of the stream fall into place. Drive south from Fredericksburg and you come up with Nipomatta. The Indians downstream on the Mattaponi Reservation wouldn't buy that. The assumption is that the name was derived from the Mattaponi Indians. Their reservation is on the south shores of the river far downstream and across the river from the King and Queen County courthouse.

The three tributaries are interesting in themselves. Move up the



they form the York River, a Chesapeake Bay estuary. The two streams are about the same size and much alike, but the Pamunkey, like the Ni Reservoir, is another story. Driving U. S. Highway 360 east from Richmond you cross the Pamunkey first—and a few miles farther, the Mattaponi.

As is true of most Virginia streams, the Mattaponi serves as the boundary between several counties. Spotsylvania County can claim its major tributaries, but all three flow into Caroline County where they join to create the headwaters of the



Dwight Dyke



Dwight Dyke

The Mattaponi is not only one of the cleanest lowland rivers in the entire U.S., but it is a favorite of anglers and their families who enjoy a natural, undeveloped setting (above), and of waterfowl hunters who look forward to jumpshooting wood ducks (below) each fall.

Mattaponi just west of Fort A. P. Hill. Downstream, the Mattaponi forms a section of the boundary between Caroline County and King William. It quickly drops Caroline, however, to pick up King and Queen County, serving as the boundary between it and King William all the way to its mouth at West Point.

The water quality in the Mattaponi is excellent. "It is one of the cleanest lowlands rivers in the country," said Department of Game and

Inland Fisheries (VDGIF) District Fisheries Supervisor Dean Fowler. There is limited development or industry in the region the river drains, and its watershed is relatively small. Fowler describes it as "low level agriculture which does not add much in the way of silt or nutrients." Obviously the Mattaponi River is a highly valuable resource that deserves serious stewardship.

The river probably comes into its own at Aylett where U.S. Highway 360 crosses it. At least that's the river that most anglers know. A general store there serves as informal fishing headquarters, offering limited fishing tackle, snacks, bait, and advice on what's biting. The upstream access point of the Department of Game and Inland Fisheries is also located there, complete with a parking area and concrete launching ramp.

Aylett, or the U. S. Highway 360 bridge to be exact, is also the line of demarcation between the management jurisdictions of the Department of Game and Inland Fisheries and the Virginia Marine Resources Commission. This is the legally defined fall line where the two state agencies divide their responsibilities. Aylett is generally considered the dividing line between the tidal and non-tidal water. It is well to keep in mind, however, that a freshwater fishing license is needed to fish the Mattaponi above the Virginia Primary Highway Bridge 33 at



Joe Machudspeth

Matta, for example, and you come to the confluence of the Mat and Ta rivers. They join to form the Matta. Travel up the Ni River and you come to the Ni Reservoir, a 411-acre Spotsylvania County water supply reservoir that offers good fishing—but that's another story.

Downstream, east of U. S. Highway 1, the Po and Ni rivers join briefly to form the Poni River, but soon pick up the Matta River and the Mattaponi is born. "Mat upon I" some anglers jokingly call it.

The Mattaponi might be considered a twin of the Pamunkey River, a like stream that flanks it on the right as the two rivers flow a southeasterly route to join at West Point where

West Point. This is essentially all of the river. Downstream, a saltwater fishing license is required.

The river is considered navigable upstream to Aylett, and in the past vessels of various sizes

have plied its waters. Included were the seagoing-ships of the early colonists, barges, freight boats, and yachts. As late as the middle 1920s the *Louise*, a remodeled Mississippi River sidewheeler, made regular runs between Aylett and West Point.

Modern anglers work the river from Aylett, motoring upstream to drift back or moving downstream using their outboard motor to make the run back to the access point. Aylett can

be busy during the peak of the spring yellow perch run.

Being a lowlands stream, the Mattaponi meanders widely, sort of wandering back and forth across the country, particularly upstream from Aylett. This is fine for those who like to drift streams for woodies and other ducks that frequent the streams. It also flows through rich swamp country, particularly downstream from Walkerton. I've never tried it, but floating the river for ducks is one of the things I want to do. Jump shooting it's called. The river has a rich waterfowling tradition, but the jump shooter has to remain alert for licensed blinds and refrain from shooting within 500 yards of them. And be careful on bends in the river. You might round one and be on a blind. Discretion would say scout the river before hunting it.

Marshes along the river also offer hunting for the little sora rail, probably the most un-

derharvested game bird in Virginia. Permission is needed to hunt marshes that are privately owned. Because the Mattaponi flows through private land for the most part, hunting is limited to the river itself unless the permission of the landowner is obtained. The best approach is to ask when in doubt.



M.L. Giovannetti

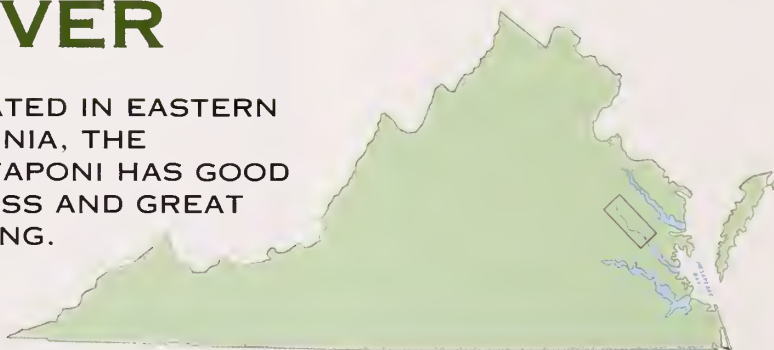
From Aylett, downstream access is good, with VDGIF maintaining additional access points and launching ramps at Melrose, Waterfence, and West Point.

Despite its excellent sora and waterfowl hunting, it is the fishing that draws most people to the Mattaponi. "The river abounds in bass, pike, the various varieties of the sunfish family, and is regarded as perhaps the best freshwater fishing stream in the state," wrote the late John R. Gwathmey in the February 1951 issue of *Virginia Wildlife*. Interestingly, this article was published just as the yellow perch were beginning their annual

spawning run up the river. It was an appropriate month for an article on the Mattaponi. Today, over 40 years later, the

THE MATTAPONI RIVER

LOCATED IN EASTERN VIRGINIA, THE MATTAPONI HAS GOOD ACCESS AND GREAT FISHING.



Map graphics by Pels



Dwight Dyke

yellow perch run is still popular among Mattaponi anglers. It can be depended upon to kick off the spring fishing in Virginia. While the Mattaponi is certainly not the only river in Virginia offering yellow perch, it seems to be the best known. One reason, of course, is the number of citation fish it has produced over the years. According to some anglers, the runs have dropped off in recent years, but the fishing is still good.

As is typical of tidal rivers flowing into the Chesapeake Bay, the Mattaponi hosts a rich variety of fish that make their spawning runs in the spring. The fishing for white perch can be excellent. So is that for its cousin the striped bass. Check the regulations closely on striped bass, however. Above the fall line, as described above, striped bass cannot be creeled, and the season below that point is set by the Virginia Marine Resources Commission and published annually in late summer

or fall. Both American and hickory shad are in the river, but the American populations are dangerously low. In fact, a moratorium on the taking of American shad has been established.

There is also a good run of herring on which there are no closed seasons or creel limits.

The largemouth bass fishing can be good. There are also chain pickerel in the river, but they are probably more abundant upstream near its headwaters and in the many creeks feeding into it.

For the catfisherman, there are channels and white catfish. A few big blue catfish have been caught in recent years. The river between Aylett and the Waterfence access point is good for cats.

Add crappie, and (above Aylett) redbreast sunfish and walleyes, and I'm tempted to think the Mattaponi River is *better* today than it was when John Gwathmey wrote about it back in 1951! □

Bob Gooch is an outdoors writer and has authored many books on hunting and fishing in Virginia. He lives in Troy, near Charlottesville.



Dwight Dyke

The yellow perch (opposite) run on the Mattaponi draws many springtime anglers (top), both young and old, to this magnificent river (above) of quiet tidal water and grace.

Reptiles Redeemed



Joe MacHudspeth

Mysterious and secretive and often maligned, the reptiles of Virginia are shedding their myths and coming to light as the most fascinating of species, with the help of a new, first-of-its-kind publication.

by Joseph C. Mitchell

How many species of snakes occur in Virginia? How many lizards and turtles? These questions have proven difficult to answer, because until relatively recently we simply did not know enough about these animals to make an educated guess. Even now, the answer that 30

snakes, 9 lizards, and 23 species of turtles live in the Old Dominion may not be absolutely correct.

Why is this so? Don't we know which species of animals reside within the borders of the Commonwealth?

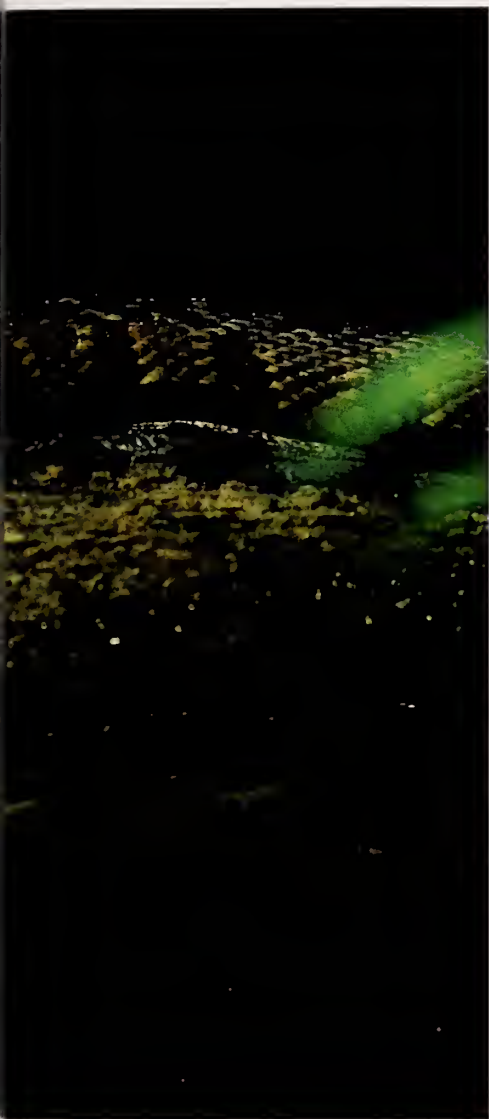
Even though it has been 387 years since Captain John Smith arrived in



Suzanne L. and Joseph T. Collins

The northern water snake (top) is often mistaken for a cottonmouth (above) throughout the state, even though the cottonmouth is found only in the wetlands of southeastern Virginia.

Virginia and made the first recorded observations of our native reptiles, it was only about 80 years ago that scientists began keeping accurate records. Smith was the first person



other museums. These specimens, which still exist, have been preserved in alcohol and provided the necessary documentation to substantiate his report.

Dunn's initial checklist recorded 26 species of snakes, 5 lizards, and 12 turtles. His 1936 revision added an additional 2 snakes and 2 lizards.

Such checklists provide answers to the most basic of biological questions, "Which species occur in a given geographic area?" Without knowing the species that occur in the state, or more specifically, say, in the Blue Ridge Mountains, we cannot begin to answer other questions about their behavior, ecology, and interactions with predators, prey, and physical environment. It is especially important to us to know which venomous species occur in the state. Published checklists, along with their support documentation in the form of specimens in museum

tion was made.

In *The Reptiles of Virginia*, for example, this required examining each museum specimen collected in Virginia since the Civil War to verify its identification, record its collection locality, and, for many specimens, taking a variety of measurements. The scientific literature was combed for locality data based on observations and information on habitat, diet, predators, prey, and other aspects of the biology of each species. To that was added a wealth of knowledge based on personal field work.

In particular, locality data for each species is invaluable. In *The Reptiles of Virginia*, these data have been plotted on maps of the state showing major drainages and county and city outlines. These seemingly simple maps are the result of hours spent in the field and laboratory collecting and preserving speci-



Rob Simpson



Suzanne L. and Joseph T. Collins

to describe the rattlesnake rattle and the custom of native American men to wear live green snakes in their earlobes. However, it wasn't until 1915 that Emmett Reid Dunn became the first person to compile a list of all known species based on scientific data.

"Dixie" Dunn, as he was called by friends, grew up in Arlington and became interested in snakes when he was a young teenager. He observed reptiles in northern Virginia and at his family's farm in Nelson County. In 1915, Dunn published the first scientific checklist of Virginia's reptiles and amphibians. He had examined all the specimens collected in the state since the 1850s and stored in the research collections of the Smithsonian Institution and

collections, provide the all-important scientific credibility. These lists also keep us up-to-date on the currently recognized scientific and common names of these animals.

In 1958, 1975, and 1985, later revisions of Dunn's lists were made by other people, each time adding new species. The latest, at least for reptiles, appears in the newly published *The Reptiles of Virginia*. This book includes three additional species (1 lizard and 2 turtles) only recently discovered in the state.

Checklists are an important jumping off point in the development of scientific knowledge about Virginia's reptiles. The next step involves assembling all the information on where each specimen was collected and where each observa-



Suzanne L. and Joseph T. Collins

Top left: The timber rattlesnake is one of only three venomous snakes occurring in Virginia, and is limited to the western part of the state.

Top: The rough green snake, a dainty and harmless snake, was used by Native American men as an accessory to their wardrobe. They threaded the slender reptile through their earlobes. **Above:** The black racer is a commonly seen reptile, and found throughout the state.



The common snapping turtle (above left) is found throughout the state and is our largest freshwater reptile, reaching 16 inches in shell length or more and weighing over 35 pounds. Above: The southernmost populations of the threatened wood turtle occur in northern Virginia. Left: The small stinkpot is sometimes misidentified as a "snapping turtle," but seldom basks and can be found in aquatic habitats throughout the state.



mens and reporting their collection locality. In short, a tremendous amount of time and effort went into creating these useful illustrations.

The particular map illustrated in this article (which was taken from *The Reptiles of Virginia*) shows the known distribution of the cottonmouth (*Agkistrodon piscivorus*) in Virginia. Notice that the cottonmouth, or "water moccasin," occurs only in southeastern Virginia. It contrasts dramatically with the map for the nonvenomous northern water snake (*Nerodia sipedon*) which occurs in every Virginia county.

One useful application of such a map immediately becomes clear.

Water snakes are often dubbed "water moccasins." Mistaken for the venomous cottonmouths, many water snakes are killed unnecessarily. The distribution map for the cottonmouth clearly shows that the venomous species does not occur statewide. Thus, drab snakes associated with water found outside this area are not venomous and should not be killed because they are believed to be harmful.

In my experience, Virginians recognize only four kinds of snakes: black snakes (large, uniformly black snakes), water moccasins (darkly colored snakes associated with water), copperheads (snakes with

markings and not associated with water), and rattlesnakes (snakes with a rattle, real or perceived). In fact, the 30 species of snakes found here exhibit a wide range of colors, patterns, and sizes, many times greater than the four "kinds" described above.

Likewise, most people recognize only several kinds of turtles and lizards. Despite the fact that Virginia contains a rich turtle fauna, the "kinds" I hear most often are: "mud turtle" for snapping turtle (*Chelydra serpentina*); "snapping turtle" for stinkpots (*Sternotherus odoratus*) and mud turtles (*Kinosternon subrubrum*); "skilpots" for painted turtles (*Chrysemys picta*) and red-bellied turtles (*Pseudemys rubriventris*); "land terrapins" for box turtles (*Terrapene carolina*); and "sea turtles." Lizards are either "scorpions" or "blue-tailed lizards" (skinks of the genus *Eumeces*), "joint snakes" (legless lizards of the genus *Ophisaurus*), or simply "lizards" (for several other species).

These 13 or so "kinds" of reptiles noted above belie the richness found

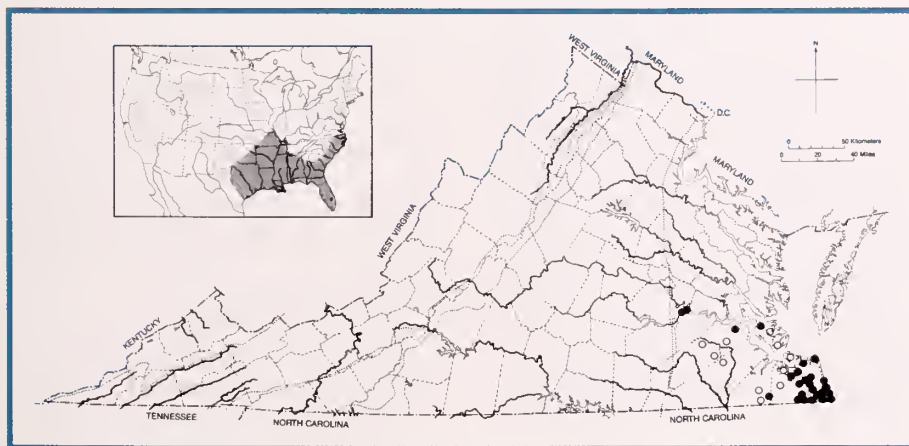


Rob Simpson

in the 62 species that occur in the state. Our herpetofauna, as the groups are called collectively, is unsurpassed by any state to the north of us and several states to our west. The reason is that the northernmost populations of several species occur in southeastern Virginia and that several Midwestern species enter the state via the Tennessee River drainages in the southwestern corner. One species, the threatened wood turtle (*Clemmys insculpta*), reaches its southernmost distribution in northern Virginia.

The complex distribution patterns exhibited by our native reptiles are the result of landscape changes that took place more than 10,000 years ago. The fossil record and modern distribution patterns of reptiles in eastern North America sug-

gest that populations were displaced southward during the Pleistocene or Ice Ages. Refugia (those areas protected from continental climatic change) were located in the swamps of Florida, the hardwood thickets in eastern Texas and northeastern Mexico, and possibly isolated pockets in the Carolinas and Virginia where the summer climate allowed successful embryonic development. During their long isolation, genetic changes took place in many species through adaptation to their new local environments. Some species changed considerably and others little during this period. When the ice sheets retreated and melted, the plants and animals moved northward, entering present-day Virginia from the south and southwest.



The result can be seen in two ways. First, the distribution patterns of the reptiles in the state show that there are two biodiversity hotspots, one in the southeast and one in the southwest. These two areas contain unusual and unique populations and relatively high numbers of species. Secondly, in some species like the copperhead (*Agkistrodon contortrix*), we see that populations in the southeastern corner exhibit brighter colors and patterns than populations from the mountains. The two groups did not differentiate enough during their isolation in the two places to become separate species, but they did change in aspects of their appearance.

An even more dramatic illustration of this biogeographic pattern can be seen in milk snakes (*Lampropeltis triangulum*). Southeastern populations are brightly colored with rings of red, black, and white, whereas mountain populations are less brightly colored with a series of reddish blotches on a grayish background. The few snakes of this

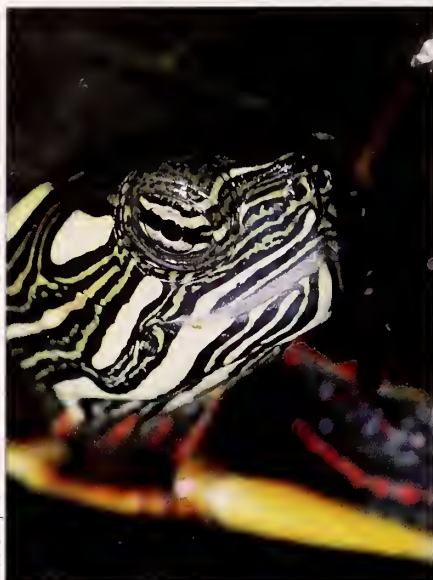


Rob Simpson

Top: Mud turtles spend a considerable amount of time out of water, even overwintering on land, burrowed into the soil. They are sometimes called "snapping turtles" because of their habit of trying to bite the hand that holds them.

Above: Red-bellied turtles, also called "skilpots," are the large basking turtles seen on logs in the Coastal Plain. **Left:** Distribution map of the cottonmouth in Virginia. As you can see, the cottonmouth occurs only in southeastern Virginia. Solid dots are locations based on specimens in museum collections and hollow circles are literature records. Maps like this one are found for each species in *The Reptiles of Virginia*, illustrating the ranges of all 62 species of our native reptiles.

species that have been found in the piedmont show intermediate colors and patterns. Current information indicates that all these populations belong to the same species, despite



Above: The eastern painted turtle is our most common basking turtle, and like the red-bellied turtle, is often known as a "skilpot." Below: The eastern box turtle is the common turtle found in open woodlands. It forages during the day, and seeks shelter under rotting logs, leaves, or mud holes when the weather turns hot.

the dramatic differences in what they look like.

What is the likelihood of your encountering all 62 species of Virginia's reptiles during your lifetime? The realistic answer is pretty darn low. People who have outside jobs, say farmers, surveyors, or foresters, and those who camp, hike, hunt, and fish see more reptiles than those who do not enjoy our natural resources. Even these people, however, will see only a fraction of the state's total diversity. That is because not all species occur throughout the

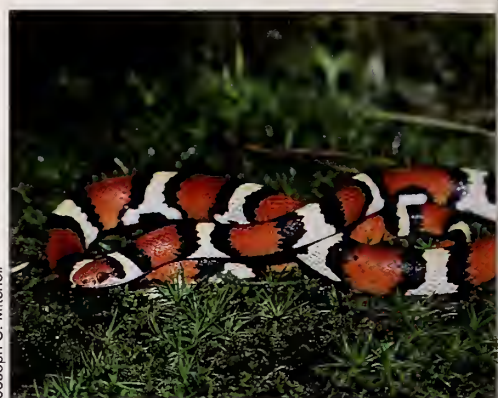


Commonwealth and because many species are very secretive. Only those truly interested in studying these animals spend enough time searching in natural habitats to increase their chances of finding them. And finding reptiles requires looking in the right places at the right times.

In addition, most species of reptiles are simply not as abundant as they once were. Landscape changes brought about by human actions have eliminated many natural habitats and populations of native species. This is especially true in the more urbanized areas. Some species have declined so much that they require protection from further loss. Yet, despite the general decline in our native reptiles over the past 387 years and the establishment of endangered species protection, Virginia still contains a rich and varied fauna. There is much to enjoy and much left to learn about them.

I occasionally hear people say in response to a biological question, "Just go look it up in a book." The truth is, we can't begin to answer all the questions about the biology of reptiles, or any other living thing, because we haven't studied everything about them. Most of what we do know about the reptiles in the state, however, is contained in *The Reptiles of Virginia*. This book summarizes the topics discussed above and presents much new information on these animals.

The basic questions answered in this book are on the geographic distribution patterns of each species, how to identify them, how their colors and patterns vary across the state, maximum known sizes for males and females, habitat affinities, known predators and prey, number and sizes of eggs and newborns, nesting and hatching times, and where known, populations sizes and movements. All known vernacular names are listed and the histories of the scientific names are described. Conservation and management recommendations are provided for each species. Many species are illustrated in color. Chapters on natural habitats and reptile communi-



Geographic variation in color and pattern are not hard to find in Virginia's reptiles. For example, rings of red, black, and yellow that nearly encircle the body on milk snakes (top) found in the southeastern part of the state differ dramatically from those with reddish blotches on a grayish body found in the mountains. And a copperhead found in the piedmont (above) will be much more brightly colored than one found in our mountains. Opposite: The five-lined skink (top) is the "blue-tailed" lizard seen in the Commonwealth. Their blue tails darken as they mature. Slender glass lizards (right) are legless and have extraordinary long and fragile tails which will break into several pieces if injured. Each piece will wiggle for a few minutes, and the common name "joint snake" is part of the myth which says the tail pieces will grow back together after sunset.

ties, history of reptile studies, biogeography, conservation, and venomous snakebite cover other aspects of the biology of this fauna.

This is not to say that this book has all the answers. However, the way scientific investigation works is that answers to one question lead to a host of other questions. Thus, *The Reptiles of Virginia* should provide direction to future research efforts on our native reptiles.

The list of unanswered questions is almost infinite. Questions like why a species reaches the northern limits of its distribution in south-



eastern Virginia are difficult to answer without specialized, experimental studies of its physiological tolerances to environmental conditions. Explaining why having a certain color or pattern is advantageous also requires experimental approaches.

While we have few answers to "why" questions, we also lack answers to many basic questions about the life history and ecology of our reptiles. For instance, we do not know much about the reproductive biology or population sizes of many snakes. Look at the small sample sizes for numbers of eggs or newborns and the absence of dates of natural nesting times for many species in *The Reptiles of Virginia*. Small sample sizes indicate that we

have too little information to fully describe the range of variation in some biological characteristic. Thus, many aspects of the basic natural history of Virginia's reptiles are still incompletely known. The book shows where the gaps are.

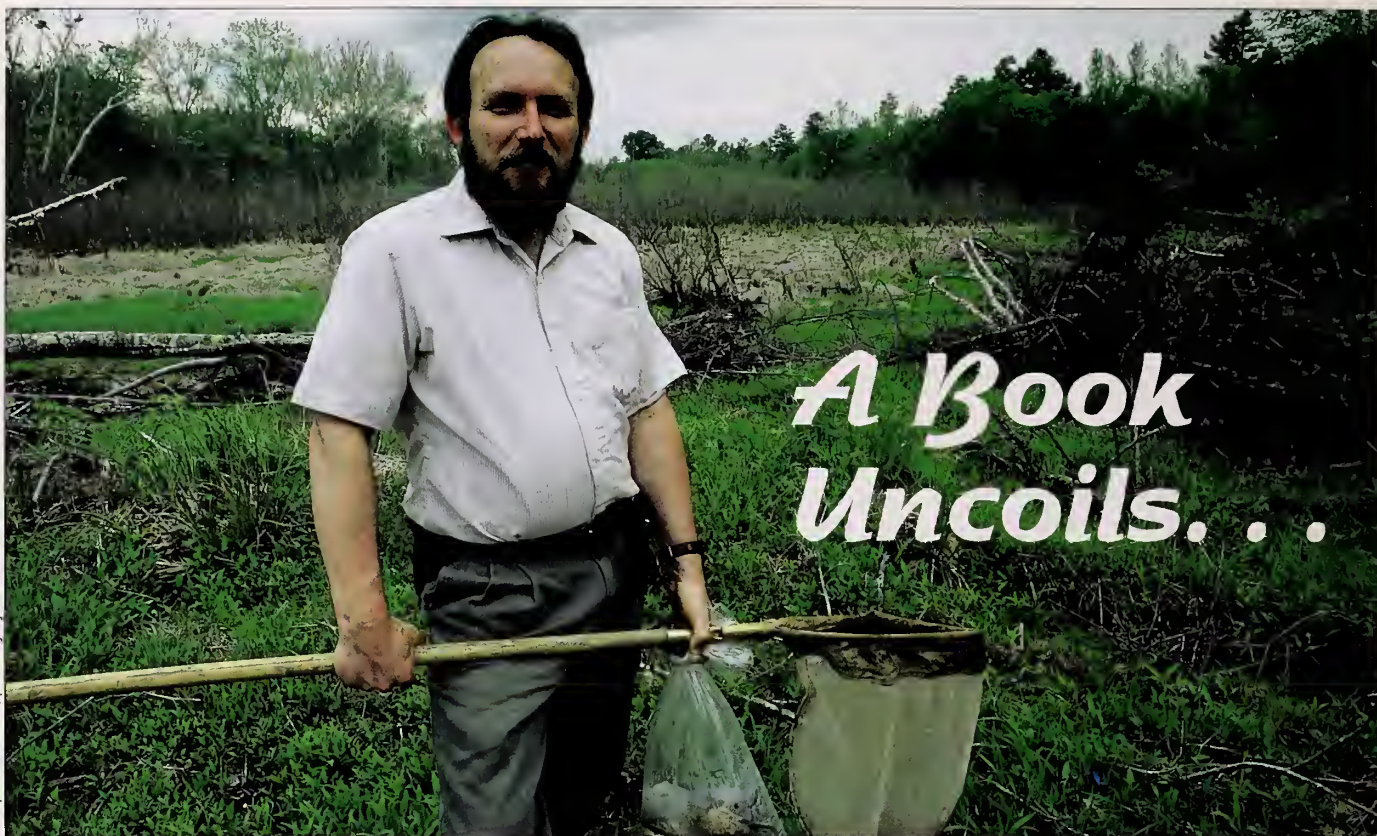
Important contributions to our basic knowledge of these animals can be made by anyone, simply by following three rules. First, be sure of your identification. A photograph should be taken to an expert for confirmation. Second, write down everything about the event or behavior as it happened. The date, exact location, accurate description, and names of the observers are the most important needs. Third, transmit this information, along with a photograph, to me or the Virginia Department of Game and Inland Fisheries. We then can determine if the observation is new and should be published, or whether it adds additional information to the existing database. Observations of reptiles interacting with one another and their predators and prey are especially needed, as are nesting, hatching, and birth dates. Perhaps you

can be the one to add a new species to the Virginia checklist.

A way in which you can keep up with what is known about Virginia's reptiles is to join the Virginia Herpetological Society (VHS). This organization was founded in 1958 and focuses on the herpetofauna of the Commonwealth. The VHS publishes a newsletter and a small journal, and holds meetings twice a year. Information may be obtained by writing to Robert Hogan, VHS Secretary/Treasurer, P.O. Box 603, Troutville, VA 24175.

What more we are able to learn about the native reptiles of Virginia depends on how well we stem the tide of habitat loss and population decline. The future of these important components of our historical and natural heritage depends entirely on how much you support efforts to manage urban growth and conserve natural habitats. It depends on how much you care about the natural world around you. □

*Joseph C. Mitchell teaches conservation biology at the University of Richmond and is the author of the newly published *The Reptiles of Virginia*.*



A Book Uncoils...

by Joseph C. Mitchell

My first personal encounter with a snake in Virginia was on my grandparents' farm in Hanover County. On a warm spring day, I found a big, beautiful black rat snake crawling through the woods next to a vegetable field. I followed it for a while, and then killed it with a stick like everyone did in those days. I was about 12 years old at the time and felt remorse for weeks.

One of my uncles, Costello M. Craig, had a collection of live snakes in rural Bedford County, and he and his sons gave talks about them at local schools and scout meetings. I spent several weeks with them each summer in my early teens. Cos taught me to appreciate snakes for their uniqueness and their role in the ecology of the area.

Cos introduced me to the Virginia Herpetological Society, a group of professional and amateur scientists of like minds who meet periodically, display their collections, and conduct field trips. I attended my first meeting in the fall of 1963. This association introduced me to the science of herpetology. During these and subse-

quent years, my parents were very tolerant of my collections of live snakes and other reptiles. I also spent as much time as I could in the woods and fields of Virginia searching for reptiles and learning about their behavior and ecology.

I maintained my interest in reptiles through a stint in the Marine Corps and on into my undergraduate years at Virginia Commonwealth University. There I gained an appreciation for the scientific literature on these species. However, it was obvious that no book contained the kinds of information I wished to see on Virginia's reptiles. I don't remember making the commitment to write the book at that time, but I did begin to accumulate all the previously published papers on the Virginia fauna.

My interest in Virginia's reptiles continued through my graduate school years, first at Arizona State University through a Master's degree and then during my years at the University of Tennessee where I pursued my doctorate. In early 1979, I formally announced my decision to write the book (now books) on the amphibians and reptiles of the state. Biologist Chris Pague joined me on the am-

phibian half of the project later that year.

Between 1979 and the fall of 1983 all of our work was funded out of our own pockets. From 1983 through 1989, the Nongame and Endangered Species Program of the Virginia Department of Game and Inland Fisheries (VDGIF) provided the first year of funding. That got us into several museums to examine previously collected specimens and into the field to make our own collections. Subsequent funding lasted through 1989.

The funding from the Nongame Program was the key to making the project work. It allowed the accumulation of massive amounts of information on each reptilian species. It also allowed me to spend several months writing the first drafts of the book; I opened the first file in late 1987. Because of the long-term funding, all the royalties derived from sales will be sent to the Nongame Program.

The publication of *The Reptiles of Virginia* is a realization of one of my lifetime goals. I hope it will be used to educate people about Virginia's diverse reptilian fauna and help to direct efforts made on behalf of its long-term conservation. □

VIRGINIA WILDLIFE

Snakes·Lizards·Turtles

THE REPTILES

OF VIRGINIA

JOSEPH C. MITCHELL

FOREWORD BY ROGER CONANT

The first complete catalogue of the reptiles of Virginia, this book takes a practical and comprehensive look at the 30 snakes, 9 lizards, and 23 species of turtles found in the state, listing common and scientific names, color pattern variations, and valuable information on habitat, reproduction, and predators and prey. Individual species distribution maps, and easy-to-use keys for quick identification are also found in this 384-page resource, along with 63 full-color illustrations of habitats and species.

This book is an essential tool for amateur and professional herpetologists, naturalists, teachers, and resource managers. Order your copy today for \$40.00 plus \$2.25 postage and handling from Smithsonian Institution Press, Blue Ridge Summit, PA 17294-0900. Phone 1-800-782-4612.



Gerald Almy

Who said you can't get stripers to bite in the heat of summer? You just need to pull a few tricks out of your tackle box to fool these mighty fish.

by Gerald Almy

The rumbling drone of the 35 horsepower outboard was hypnotic in the warm still air as I cruised slowly along a river channel dropoff on Leesville Lake in cutoffs and t-shirt. Coupled with the sizzling heat of the August afternoon, I found my attention sagging as I watched the two baitcasting rods vibrate in their holders, one on each side of the boat.

But not for long. Suddenly the staccato shriek of a sputtering drag pulled me from my reverie back into reality. A striped bass had nabbed one of the jigs shimmying 20 feet down, three feet behind a Storm Big Mac plug. I quickly set the hooks, then battled the striper while struggling to avoid tangling with the other line in the water. It was a grueling fight, but 10 minutes later a 20-

pound fish was at boatside. Stretching the landing net out with one hand, I pulled back with the rod, led the spent fish over the mesh and quickly hoisted it aboard.

A short while later after I'd resumed trolling, a boat idled up and I saw that it was my friend Pete Elkins, author of *Catching Freshwater Striped Bass*. Pete had just begun fishing and saw me pull in the big striper without realizing he knew me. Since he didn't have any Big Macs on his boat, I gave him one and back at the dock I found out he used it to take a 16-pounder by pulling a twister tail rigged on a worm hook behind it. While he caught that fish, I also landed and released another striper in the 10-pound class on a bucktail.

For a short afternoon on the water, it was not a bad haul. And it

was made in the heat of midafternoon in the middle of summer.

While hot weather striper fishing rarely matches the intensity of spring's sport or yields the large numbers of fish, by adapting your tactics to the changed conditions, you can manage to make some very respectable catches during the "dog days" of July, August and September. Quite often, as my first fish at Leesville showed, you'll also land some of the heaviest fish of the year as your reward. Equally appealing, the stripers will hit a wide range of lures and baits used in a number of different ways, so the fishing always stays varied and interesting. The key is to alter your strategies to fit the changed conditions the fish must cope with at this time of year.

Before going into the best techniques for summer stripers, a look at

SUMMER STRIPERS





Doug Stamm

the habits of these fish in hot weather may be helpful. The striper is basically a cool-water fish. They favor water temperatures of 72°F or lower (65°-68° is ideal) and they need a minimum dissolved oxygen content of 3 or 4 ppm. This combination of cool temperatures and sufficient oxygen can be located in two areas on Virginia's lakes: around underwater springs and in deep water near the thermocline.

In summer, lakes separate into three layers. The top layer near the surface has enough oxygen for stripers from its contact with air. It also holds an abundance of baitfish such as shad. But this level is also where the warmest water in the lake rises to, and it's usually too hot for stripers except for short feeding periods when they swim up into it for brief feeding binges to chase shad.

The bottom layer is called the hypolimnion. It's cold enough, since the densest water sinks down there. But it generally contains little oxygen. That leaves the middle thin layer called the thermocline. There stripers find the 65-70°F water they need, and at or slightly above this level they also find enough oxygen.

The key to locating summer stripers is thus to look for either cool springs entering the lake, or the thermocline. This is where almost all of the true bass will be during summer. In fertile lakes, the thermocline might be as shallow as 15 or 20 feet. In other waters, it may be close to 60 feet down. An electronic thermometer or hand-held model on a string will help you find the depth where the water temperature suddenly cools to the striper's comfort level. Sometimes the thermocline will also

show up on sensitive chart recorders.

After you pinpoint the thermocline, try to focus on areas where this depth intersects with structure that can hold stripers. Good areas include submerged islands, river channel dropoffs, creek intersections, long points, bridges, steep shorelines near the dam and underwater humps.

Stripers often travel along river and creek channel edges if they intersect with the thermocline. The other types of structure are also attractive to them because of their effect on baitfish. Shad often bunch up into tight schools when they swim over or near objects such as humps, points or bridge pilings. That's where the predatory fish can easily charge into the school and grab the hapless forage when they're compressed into a pack.

Use a topographical map and sonar to pinpoint these areas at the proper depth level. Also try to find baitfish on the graph or flasher, as well as the stripers themselves. A striped bass will show up on a graph depth finder as a large inverted U, V or J shape. On a flasher, the fish will appear as distinct individual red bands.



Gerald Almy

To bring in striped bass during the heat of the summer, you must make sure your lures get down to the thermocline, that middle thin layer of water which is cool enough and carries enough oxygen for striped bass to survive. The thermocline might be as shallow as 15 or 20 feet in one lake and as deep as 60 feet in another.

If you find cover, but it doesn't hold baitfish or stripers, keep moving until you locate the proper combination of water depth and structure with at least baitfish and preferably stripers, too, showing on it. Checking with bait and tackle shops or going out with a guide can help you home in on these areas, but there's no substitute for time on the water to pin down half a dozen or so striper hangouts that are used during summer. When you build up a repertoire of spots like this, you can then simply go from one to the next each time on the water to see where the fish are holding that day.

Stripers can be caught in a number of Virginia lakes. My five favorites are Smith Mountain, Leesville, Anna, Gaston, and Buggs Island. Any one of these can produce excellent fishing during even the hottest summer days. The lakes in the Virginia Beach-Norfolk-Suffolk area can also be good, including Western Branch, Prince and Meade.

Three tactics are especially useful for summer stripers in the Old Dominion: trolling, live-bait fishing and casting jigs.

Trolling, which produced the 16-pounder for Elkins and 10 and 20-pounders for me on Leesville, is one of the top methods for hot weather striped bass. It's a particularly good choice if you are new to the body of water, or if you don't get a chance to get out too often and need to cover ground to locate fish. Trolling takes lures down deep into the most likely payoff zone of 15 to 45 feet quickly and keeps them there while the boat is steered over prime structure or along a depth contour line.

For trolling deep for summer stripers, you have several options. Some people use diving devices such as the Pink Lady made by Luhr-Jensen to take bucktail jigs in the 1/4-1-ounce range deep. The method I prefer is to tie on a large diving plug such as the Bomber Waterdog, Whopper Stopper Hellbender, Storm Big Mac, Bagley Deep Diver Shad, Rebel Spoonbill or Deep Diver Redfin and attach a leader and bucktail to it. This way you may catch some fish on the plug, but



Gerald Almy

you'll also have a small bite-sized morsel—the jig—trailing 24-36 inches behind it. You can remove the rear treble on some lures and attach the leader there.

On other models it works better to tie the leader to the center hook on the lure's front treble. Top colors for the trailing jig are white, yellow and chartreuse. Or, you can simply thread a white plastic worm or twister tail on a 1/0 to 3/0 worm hook and use it for a trailer, instead of the light jig.

The big-lipped diving plug will usually run at 18-25 feet, trailing the jig behind. The plug takes the bucktail deep and acts as an attractor, while the fish usually homes in on the small critter behind it that more closely matches the forage it's feeding on.

Downriggers can also be used to take jigs, thin minnow plugs, vibrators and other lures down to the

For trolling deep for summer stripers, try a large diving plug and attach a leader and bucktail to it. The plug serves as an attractor for the jig trailing 24-36 inches behind it.

level where stripers are holding. With these you simply set the cannonball at the exact depth fish are showing (minus whatever depth your lure will also achieve on its own). Top colors for plugs used with a downrigger are silver and chrome with blue, chartreuse or black backs. Trolling can produce at any time during summer, from the dark of night right through the hottest noon day sun. It takes patience, however, since you may have to slowly idle over likely structure for hours before striking two or three fish in quick succession.

Live-bait fishing is another excellent tactic for hot weather fish. The best choice is live shad, which you can catch either with a throw net or

by using a dip net below dams. These baits are very fragile and must be kept in circular bait containers with an aerator. Jumbo shiners will also work as a substitute. A good baitfishing rig consists of a 1/2-1-ounce egg sinker threaded on the main line above a barrel swivel and an 18-48-inch leader with a size 1/0-2 bait hook on the end.

Find out where the thermocline is or where a cool spring enters the lake underwater and then pinpoint good structure nearby or locate baitfish or stripers on the depth finder. Impale the bait through the lips or lightly in the back. Mark where two feet is on your rod above the reel, then strip out line in 24-inch increments until you reach the level where fish or bait are present. You can either hang onto the rod or place it in a holder.

At this point, you have several options. If the wind is light, you can simply drift over areas where fish and/or bait show on the depth finder. Using a trolling motor to slowly move around following the bait and fish is another good tactic. If the fish are holding on one small piece of structure, simply anchoring out and staying put also works.

If you locate stripers on the depth finder and dangle bait like a shad or large shiner in front of them, bites won't be long in coming. Hesitate just a brief moment after a strike, then set the hook hard. Line testing 6-17 pounds can be used for this fishing, depending on the size fish you're latching onto and how much sport you want.

A final tactic I use for summer stripers on lakes such as Anna, Gaston and Smith Mountain is casting and retrieving with bucktail jigs. This is a technique guide Dale Wilson taught me on Smith Mountain over two decades ago and it's proven its worth on other lakes throughout the state over the years since then. On Leesville I once watched Dale use this technique to pull in a 27-pounder. On Smith Mountain, he's taken fish topping 30 pounds with the method.

This is very similar to the approach used for taking spring

stripers when they are schooled up on points and flats chasing shad. The only difference is that instead of casting and then retrieving the jig as soon as it hits the water, you have to count down and work it much deeper. And you may be fishing quite a ways offshore instead of close to the bank. Some anglers go with a heavier jig in summer to get down to the holding level of the fish more quickly. Dale prefers to stick with the same 1/4-3/8-ounce jigs he throws in spring; he just waits longer for them to sink.

"The slowly dropping jig seems to excite the fish," he says. "You'll often get strikes as it's falling after your cast, so be alert."

If a strike doesn't come, count the lure down until it reaches the depth where the structure or thermocline is, or where you have seen fish on the sonar. To know how fast your jig falls, you can cast it in a swimming pool and count down on a watch until it hits. Generally around a second per foot is typical, depending on whether you have a plastic twister tail on the lure, what weight it is and what pound test line you're using.

Some days Dale likes to add a twister tail, others days he just uses the plain jig. "If the baitfish the stripers are feeding on are large, a twister tail can help. They're also good in slightly stained water. For clear water just the jig is usually best."

If no strike comes on the drop, engage the reel and begin a slow, steady retrieve. After you've reeled four or five times, pause for several seconds. This will let the lure drop deeper and often triggers strikes as it falls like a wounded shad. Pausing like this also ensures that the lure stays down in the strike zone—typically 15-30 feet below the surface.

It's a slow fishing method, so you want to be sure you either have stripers pinpointed on the sonar before trying it, or know from the past that fish hang out in that area in summer. But when you do fool fish with the cast and retrieve method on a broiling July or August afternoon, success seems especially sweet. □

SURFACING SCHOOLING FISH

In spite of the lack of oxygen and warm waters of the surface, summer stripers occasionally still venture on top to crash into schools of shad. When they do, no method beats casting and retrieving jigs weighing 1/4-1/2 ounce. Reel at a moderate speed, beginning your retrieve just a few seconds after the lure hits the water so you cover the level just 3-10 feet beneath the surface.

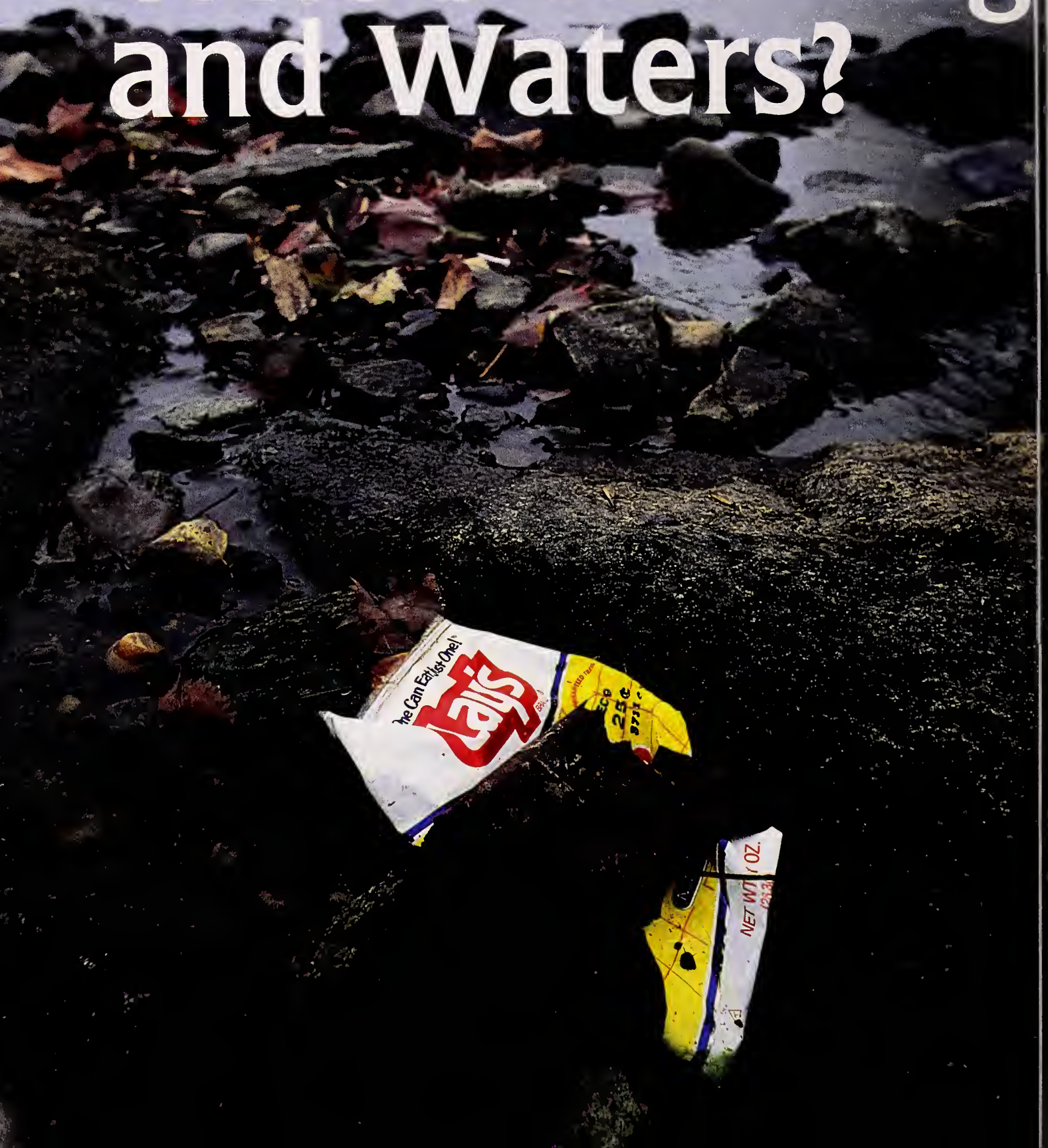
When you luck into a school of arm-long stripers crashing into frantic silver baitfish like this and splashing water sometimes 15 feet into the air, the discomforts of summer will seem a small price to pay for the exciting fishing that lies at hand. Always keep your eyes peeled for such topwater commotion while using the proven summer methods—trolling, live-bait fishing and slow crawling jigs over deep offshore structure. As fall approaches, finding the pinstriped true bass crashing bait on top will become more and more commonplace.



Jigs: photo by Gerald Almy

Gerald Almy has been a full-time outdoor writer for over 17 years. He is currently a hunting and fishing editor on the staff of Sports Afield.

Who's Trashing and Waters?



Our Woods

Litterers come in all shapes and sizes, and taxpayers shell out millions of dollars every year cleaning up their mess. Here's how to stop the trash who are trashing our woods.



Tim Wright

Putting trash where it belongs is a key to solving our litter problems. It's time to stop treating our woods and waters like one giant trash can. Want to help? Call 1-800-PRIDE-VA.

by Don Shumaker

The fellow backed the battered pickup down the wooded road, out of sight of the paved, secondary road. As quietly as possible he unloaded the mess...brick bats, broken cinderblocks, roofing shingles and assorted paper products. Starting the truck, he eased up to the highway, checked to see if the coast was clear and proceeded to haul freight. This man had just committed a criminal offense, a Class One Misdemeanor.

Approximately two weeks later, this same fellow, who lived less than three miles from the scene, was back

cleaning up his mess. He was given a choice...either clean it up or face charges that could have resulted in fines of up to \$2,500. He got off lucky.

The throwing and dumping of litter in the Old Dominion's woods and waters has become a major problem and eyesore. Who's doing the trashing? People from all walks of life. The typical litterer does not always fit a specific profile. He could be rich or poor, a lawyer or a construction worker. She could be a doctor, accountant, secretary, or a housewife. Many who litter do so

while hunting, fishing, boating, snow skiing, camping or traveling to and from outdoor activities. None of these are sportsmen. A true sportsman or sportswoman would never defile the face of nature with common trash.

Littering is also the source of a tremendous amount of unnecessary spending for Virginia taxpayers. The Virginia Department of Transportation (VDOT) spent 4.2 million dollars from June 1992-June 1993 for trash and litter pickup along our state highways. The Virginia Department of Environmental Quality (DEQ) will spend an additional million dollars or more this year battling litter in our cities and towns. These tax dollars could be spent for more noble purposes.

Landowners often literally get "dumped on." The hard-core litterer will often drive miles out of the way to make a "deposit" on some remote piece of property. Why does a trashy individual do this when there are dump facilities in every county in the Commonwealth? Bad habits, perhaps. Thoughtless unconcern for his neighbor, for sure. Landowners spend thousands of dollars annually to remove other people's garbage from their property. As a result, many have posted their property and refuse hunters and fishermen access.

We have determined that litterers are people from all walks of life and social status. They could be our yuppie city cousin or our backwoods uncle down the road. Now let's look at what can be done to put a dent in the garbage that's being scattered over Virginia's woods and waters.

Dealing With Litterers

The fellow mentioned at the beginning of this article was careless and got caught. He had no idea that my younger brother was up the road a piece (putting up posted signs) and saw him go by. After hearing of the incident, I went to the trash pile and began to dig. A letter addressed to this fellow's daughter and several other pieces of discarded mail were found. The sheriff's office was called, a deputy came out, collected the evidence and visited

the man. His alternatives were to clean up his mess and never go on the property again, or face court charges of littering and trespassing. Since then, a locked cable has been installed across the road. The Buck-

2. Call the Sheriff's Department (you will have to testify in court), or get the license number and go yourself to a magistrate's office and swear out a warrant.

Game wardens advise people

hurt the decent outdoor types.

Landowners who are being dumped on can place cables or gates across roads that are being used as dump sites. Posted, No Dumping and No Trespassing signs should be



Lynda Richardson



Lynda Richardson

ingham County Sheriff's Department handled the situation with concern and efficiency.

Several years ago, while trapping on some remote streams, I came upon a similar situation. Crawling up under an old wood-trestle bridge, I was confronted with a pick-up load of plastic garbage bags filled with household trash. I guess the mess disturbed the local mink and otters as much as myself. Picking through the Pampers and coffee grounds, I found several utility bills with the culprit's name and address. The local sheriff handled the matter at once. He told me later that trash dumpsters were closer to this man's house than the spot where he threw the trash into the stream.

Identify Litterers and Prosecute

As a citizen or a landowner, you have the right and obligation to see litterers pay for their trashy ways. If you observe someone littering, take the proper steps

1. Get the license number of the vehicle.

who observe others littering or vandalizing VDGIF property to get the license number and contact either the local game warden or the Sheriff's Department.

Landowner Precautions

Landowners with ponds, streams, or lakes on their property are constantly asked for permission to fish their waters. Very few of them like to refuse people they know if these people will respect their property. The sad part of it is that many won't. They will leave a scattering of beverage containers, bait cans, etc. behind them. The landowners become furious after several rounds of this and often close the area to all people, including family members.

A good way to work around this problem is for the property owner to inspect the area before letting anyone gain access, advise them that the area is clean and must be the same when they leave. If any litter is left behind, then this particular person cannot return. Simple. This method punishes the guilty but does not



Rob Simpson

Many people don't realize that trash is more than just an ugly sight. It can kill small mammals like shrews, which get trapped in discarded bottles (top), injure deer caught in cans, and strangle birds tangled in plastic. Fortunately, close to 50,000 volunteers in the state are cleaning up our highways through VDOT's Adopt-A-Highway Program (1-800-PRIDE-VA). Sportsmen's groups (opposite) are a large part of this effort, with more than 113 clubs statewide participating in the program. By educating young hunters that sportsman-like conduct includes safe handling of firearms, respect for game and the environment, we are on the right track to cleaning up Virginia.

put up high enough to discourage being torn down. Landowners can also play detective and sort through trash for evidence of who did the

deed. If any is found, they should notify the authorities instead of approaching the culprits themselves.

Peer Pressure

Here's where any sportsman can do a heap of good. Whenever you're afield or on the water and a companion throws down a piece of litter, calmly pick it up and don't say anything. Most folks will become embarrassed and get your message. If someone laughs at me or becomes defensive, I tell them that I don't litter and don't appreciate seeing other people's litter in the woods or on the water. If the person still insists on being a jerk, I never go afield with that person again (and often tell them why). Peer pressure is a wonderful tool to use in reforming litterers.

Club/Organizational Rules and Policies

The Gold Mine Run Hunt Club is an old club that leases some of the best hunting lands in Virginia. Their policy on littering is as follows:

"If a Club Member or Guest is guilty of littering, he or she will be fined \$25.00 for the first offense and be responsible for disposing of the litter properly. A second offense of littering means expulsion from the club." This rule applies to any and all members and guests.

These people take littering seriously. Landowners know of their littering policy and are pleased. They also see trash barrels strategically placed where club members often congregate between hunts.

Any hunting, fishing or outdoor related club or group can adopt the same or similar policies regarding littering. Make sure that new members and guests know the rules.

Education

It is our responsibility to educate our youth in regard to littering. This education process is best accomplished by setting a good example. Explain to these young folks why you don't throw your can or bottle out of the truck window or boat. Explain to them that not only is litter a

slap in Mother Nature's face, but it is also against the law, and that it is not fair to the landowners. Tell them of the consequences litterers can face.

Support programs that hold anti-litter campaigns, such as those sponsored by DEQ. Each county in the Commonwealth has a designated county coordinator who coordinates litter clean-up programs. If your county offices can't supply you with a contact person for this voluntary program, call Mary Clark German at 804/762-4448. VDOT sponsors the popular Adopt-A-Highway program. Call 1-800-PRIDE-VA for details.

There is no excuse for littering our woods and waters. Those of us who enjoy and appreciate Virginia's beautiful outdoors must take any and all steps or actions necessary to keep it clean. It is our responsibility. We owe that much to Mother Nature and the generation of outdoor lovers who follow in our footsteps. □

Don Shumaker is a freelance writer and big-game guide from Buckingham County.



Dwight Dyke

Basic Baits



Yellow perch and worm; photo by Doug Stamm.

Tired of plastic worms and glittery grubs? Get back to the basics of live bait with a few tips from an old hand.

by Jack Randolph

Last night must have been a wonderful one for him, because he was surely paying the price this morning. Freshly unshaven and with bloodshot eyes that hung almost to the deck, our mate was preparing the bait, which amounted to taking occasional desultory whacks at a pile of squid with a long, rusty knife.

For all the world, this fella looked like one of those guys you see at a barbecue joint working on pork shoulders with a meat cleaver. I half expected him to look up and ask me how I liked my squid, minced or sliced?

We were on a party boat heading out into Monterey Bay, California, in search of some easily found rock-fish. Seeing squid butchered like that grated upon my East Coast sensibilities. I was used to cutting my



way they could get it. These fish didn't have to be fooled into thinking the piece of squid was a minnow. They simply wanted a bit of squid.

These Pacific rockfish, by the way, aren't anything like our rockfish or striped bass. They belong to the genus *Sebastes* and there are about 50 species of them. They range in size from a half pound to gosh knows what, and they are as easy to catch as pouring water out of a boot. We had a half dozen hooks on our lines and we caught 'em a half dozen at a time. But this bit isn't about fish, it's about bait.

Squid makes a fine bait for flounder and it has other uses, too. You can catch trout and croakers with it and it really outperforms pork rind when strips are used with bucktail jigs, but let me share a trick or two with you about using this bait.

To prepare a squid for bait, pull out the tentacles and toss them away. Open the cylindrical body with a lengthwise cut. Throw away the transparent celluloid backbone. Scrape off the skin on the outside and the "ink" from the inside and you should end up with a flat piece of white meat. If you don't, you probably didn't have a squid in the first place. Throw it away and try again.

OK. So here you are with a square of white squid meat. Cut out pennants of squid about an inch wide at the wide end and, of course, tapering to a point. You should end up with a whole mess of pennant shaped strips, each as long as the slab of squid is wide.

"So," you say. "What else is new?" Here comes the trick. When using squid, most guys hook the strips as you would a piece of pork rind. Hook it once near the end and again an inch or so further down. Wrong!

For better results, hook the pennant twice at the wide end. It gives the flounder or trout more to see and it buys more hits.

Have you ever used saltwater minnows, like killifish or mummichogs, for flounder? Yes, you say? How about for smallmouth bass? The smallmouths like them better



Mel White



Lee Walker



Mel White

When preparing squid for bait, open up the cylindrical body with a lengthwise cut after pulling out the tentacles (top). Throw away the backbone, scrape off the skin on the outside and the ink from the inside, and cut out pennants of squid about an inch wide at the wide end (middle). Finally, make sure you hook each pennant twice at the wide end (above and right).



squid with the precision of a surgeon, so that each miniature pennant properly presented was capable of bamboozling a flounder into thinking that it was a minnow bent on a swift escape.

I proceeded to give the mate a superfluous lesson in squid carving. Later I learned that the mate knew a heck of a lot more about cutting up squid for rockfish than I did. They wanted their squid in carelessly cut chunks. In fact they wanted it any

than flounder. If you were to design a bait to imitate the popular madtom, it would probably look a lot like a killifish. Their body shapes are similar and they are dark in color and the killifish or mummichogs, collectively called "killies," will live on a promise of rain.

In the Northern Virginia area, these excellent baits are sold under the local misnomer, "Baltimore minnows." In the Virginia Beach area, the same fish are erroneously called "gudgeons." According to McClane's Fishing Encyclopedia, there are no gudgeons on this side of the Atlantic.

Killifish can be caught by dragging a seine in shallow brackish water, but the most common method is to use a "G" Minnow Trap baited with crab or pieces of fish placed in the creeks and guts in brackish or saltwater.

Killies are great bait for flounders in saltwater, but they will catch any freshwater fish that will hit a minnow. Hooked through the mouth on a #4 short shank hook, about 8 inches below a buckshot-size split shot sinker, they are deadly for smallmouths. Usually when a bass is hooked, the minnow slides up the leader and can be used over and over. I have caught as many as five smallmouths on a single killie.

Killies will live for a while in wet seaweed, but if kept in a Styrofoam minnow bucket full of cool, sweet water, the killies will think they are in minnow heaven and with just a little TLC, they'll live weeks—maybe months.

I've never swatted a dobson fly. In fact, I don't believe I'd know one if I met one without an introduction. But I sure know their kids. They are called hellgrammites, the larval form of the dobson fly.

Hellgrammites look like something that would crawl out from under a rock. In fact, that's where you find them, under rocks in shallow water or close to it along fast moving, cool streams.

With flattened bodies up to three inches long, they aren't the kind of thing you would give your girlfriend to put on a hook. Show one to



Doug Stamm



Mel White

Killifish (top) are super baits for flounder (above), but are even better on smallmouth bass. Easy to keep, they resemble madtoms, and are sometimes sold as "Baltimore minnows," or "gudgeons."



Steven Spielberg and he'll blow it up and stock it in Jurassic Park. The ornery critters can bite, too. But they get bitten more than they bite. Most folks hook them through the collar plate and drift them down to the waiting fish. A #4 short shank hook about 8 inches below a #4 buckshot-size split shot is about right. The problem is, every fish in the river thinks hellgrammites are good to eat. You'll catch lots of red eyes and sunfish for each bass you'll catch.

About the only place in Virginia where grass shrimp is used as bait is on Chickahominy Lake. Ed Allen discovered that bream would rather have grass shrimp than most anything else. He nets them from the Pamunkey River.

When I was in high school, we used to net grass shrimp in a nearby tidal creek and use them to catch yellow perch during the spring run. We kept them in damp sawdust. Some

years later I chummed for striped bass with grass shrimp at Barnegat Inlet in New Jersey. Catching stripers to 30 pounds was not unusual on these tiny baits. We also chummed for gray trout with these great little baits.

I used to fish the Bay Head-Manasquan Canal in New Jersey for striped bass. I guess I fished it virtually every day in season until I was drafted in the Army in my early 20's. Often, in May at dawn we would see grass shrimp floating down the canal from Barnegat Bay and huge stripers would rise, like trout on mayflies, taking the shrimp close to the surface.

Undoubtedly, some of our ancestors here in Virginia made more use of grass shrimp than we do today, but baiting with them in salt and brackish water is an art form that would be well revisited.

We don't find many nightcrawlers around here, but they are plentiful in northern climates. Most of the ones we purchase here are from Canada. In New Jersey, we found all the nightcrawlers we could use on local golf courses.

True to their name, these huge worms came out at night. They always kept their tails in holes in the earth and if they sensed your presence, they would zip back into the hole with the speed of light.

Nightcrawlers are somewhat sensitive to light and often just the glare of the flashlight was enough to make the big worms disappear. Some fellows covered their lights with red cellophane, which seemed to reduce the nightcrawlers' sensitivity. A good nightcrawler catcher soon learned to grab the worms where the tail disappeared into the earth. You had to pull the worm out of its hole gently or you could break it in two.

Several years ago, Gary Roach, a well-known Midwestern walleye fishermen, came East to demonstrate the Lindy Rig, an effective bit of terminal tackle for walleye. I was working in the fishing tackle business at the time and Bob Sheets of Chesterfield and I accompanied Gary on a short fishing trip on the

James River at Dutch Gap.

The Lindy Rig is a variation of a rig most saltwater fishermen would recognize as the fish-finder. It employs a peculiar walking sinker which slides on the line. A snap swivel is tied to the end of the line to prevent the sinker from sliding off, and a #4 hook with an ultra-short shank is tied to a leader or snell that is about 3 feet long. The loop of the leader is placed in the snap swivel. We were using ultralight spinning outfits and nightcrawlers for bait. The trick was to back-troll using the electric motor while the sinkers bounced on the bottom.

I noticed that Gary took the nightcrawlers out of their cartons and placed them in a foam minnow bucket that was full of ice. The worms, so treated, seemed to be much livelier than they were in the original cartons. A nightcrawler was hooked only through the "nose."

We left the landing at Dutch Gap on the James River and ran scarcely 500 yards before we started to fish. We never left the first hole. In the heat of an August day, we caught a mess of bass. This was in the days when the daily limit was eight, and



Grass shrimp are great baits for yellow perch and striped bass in salt or brackish water, and for bream on Chickahominy Lake.



Live bait like hellgrammites (top) will stop every fish in the river, including red eyes and sunfish, while killifish (above) are deadly for smallmouth and any freshwater fish that will hit a minnow.

we either limited out or came close to it. I needed no further introduction to the Lindy Rig.

Like hellgrammites, a problem with nightcrawlers here in Virginia is so many fish like 'em. It's difficult to fish for any one species without another grabbing the bait first.

Once in Germany some years ago, I had fished a beautiful stretch of a German trout stream with very little success. It was a "flies only" stream and it was difficult to fish. As I was leaving, I noticed a German fisherman near the bridge and I

asked him if he had caught anything. He held up a trio of beautiful rainbows.

Admiring his catch, I asked what he caught them on and he replied in German, "A big red fly."

Right then I should have smelled a rat, but I nodded and waved and was about to leave when I noticed his fly had become snagged in deep water downstream. Try as he may, he couldn't get it free, and he couldn't break his leader.

Since he was wearing hip boots and I waders, I offered to retrieve his

fly for him. He didn't want my help, but I waded in anyhow.

The first thing I noticed as I reached the fly was that his leader was very heavy, not tapered, and about 15-pound test. It was big and it was red and it was baited with a nightcrawler.

When I was living at Willow Hill Plantation on the James River, it was a good run to buy a few dozen minnows for crappie fishing. The best alternative was to catch our own from Ward's Creek. It was also cheaper. The creek was full of minnows of all colors and nationalities, including killifish, shiners, and a variety of darters.

We used an umbrella net that was about four feet square. An umbrella net is a square net supported by a wire frame that hooks into each corner of the net. A line tied to the center of the frame is connected to the end of a long pole by a three-foot length of light rope. The idea is to bait the minnows so that they swim over the net. When enough minnows have congregated over the net, it is simply a matter of lifting the pole and the net. The trick is to get them over the net.

The standard bait for this sort of thing is damp white bread. Roll the bread into tiny buckshot-size pellets and toss it near the edge of the net, coaxing the hapless little fish into the net.

A better method, we discovered, was to buy those little flat, circular shaped cans of catfood, checking the label to see that there were plenty of fish in them. The more the better. A few chunks of this stuff in the center of the net would really call in the bait. I always liked to chuck a little bread in, too. It seemed to bring the minnows in a little faster.

There are loads of other baits, so many that I'll be revisiting this subject in the near future. I bet we can take another whack at this subject without once treading in the same ground. In the meantime, gather up some bait and go fishing! □

Retired VDGIF assistant director Jack Randolph is an avid fisherman and freelance outdoor writer.

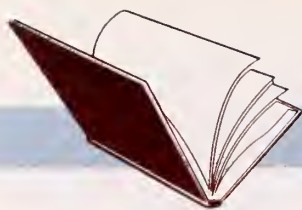
Put Swimming Fish on your walls!

The Virginia Department of Game and Inland Fisheries has produced two full-color fish identification posters. Just released is a 21 3/4" X 34" poster of 24 species of saltwater fish in Virginia. The second is a 21" X 36" poster of 23 freshwater game fish in Virginia. Each is available for only \$8! Specify which poster you'd like and send your check (made payable to the Treasurer of Virginia) to: Fish Poster, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.



Give Wildlife A Ride

Why not show your concern for wildlife by ordering a Wildlife Conservationist license plate from the Department of Motor Vehicles? Choose either the largemouth bass or mallard license plate featured here and help the Virginia Department of Game and Inland Fisheries fund wildlife conservation management and research projects. For ordering information, see gray card in this magazine.



Journal

Sportsman Groups Join to Improve WMA Habitat

A wildlife habitat improvement project on the C. F. Phelps Wildlife Management Area (WMA) in Fauquier County has received support from the National Wild Turkey Federation and the Rappahannock chapter of Quail Unlimited. The project involves constructing and seeding 1.5 miles of linear strips around three recently harvested timber sale units. Thirty to 40-foot wide openings will be created and seeded with orchard grass and clover. Once completed, the project will offer approximately seven acres of grassy openings to the quail and turkey on the wildlife management area. Called "brood strips," they are especially valuable in providing food to young birds.

Funding for the linear strip construction, which involves stump and logging debris removal, has been provided by the National Wild Turkey Federation through its Super Fund Program. The Rappahannock Valley Chapter of Quail Unlimited in Spotsylvania donated the seed mixture along with 1,000 lbs. of lime and 500 lbs. of fertilizer. □

Fairy Stone WMA Improves Waterfowl Habitat

Five acres of warm season grasses have been planted around four waterfowl impoundments at Fairy Stone Wildlife Management Area in Patrick County. Using a warm season grass planting drill, VDGIF Wildlife Biologist Assistant Mark Frank planted switch grass to provide perennial, long-lasting nesting and brood cover for waterfowl.

In addition, Frank has mounted numerous wood duck boxes which members of the Martinsville Chapter of Ducks Unlimited are monitoring for nesting and brood success. Frank reports that numerous species

of ducks used the ponds last winter, including black ducks, wood ducks, teal, ringnecks, mergansers and ruddy ducks. □

A Helping Hand for Herring

VDGIF fisheries division personnel, in cooperation with the U.S. Fish and Wildlife Service, successfully completed a trap and transport project for reestablishing blueback herring. During a two-week period in April, over 5,000 "bluebacks" were collected below Walker's Dam on the Chickahominy River, transported by tank truck to Maidens Landing, and stocked in the James River. An additional 1,400 bluebacks were also collected at Walker's Dam and stocked below Brasfield Dam on the Appomattox River.

"We hope offspring of the stocked fish will return as mature adults, migrate through new fishways and breaches in dams on the James and Appomattox Rivers and spawn, thus reestablishing natural populations of herring in these rivers where none have existed for hundreds of years," said Price Smith, VDGIF Fisheries Biologist Supervisor.

River herring will be transported throughout Virginia in future years, restocking rivers above blockages. Increasing the spawning habitat and rearing areas for herring in Virginia will help ensure the survival and population growth for this species throughout Virginia and the Chesapeake Bay. □

The Cohoke Club Donates Depth Sounder

The Cohoke Club of King William County donated a much-appreciated Hummingbird Platinum ID Depth Sounder to VDGIF for use on its tidal river research boat. VDGIF Fisheries Biologist Supervisor Dean Fowler gratefully accepted the equipment from club

president H. Massie Burger. "The depth sounder will be used to document water depths when setting seines and other nets," said Fowler. "This valuable donation also gives instantaneous temperature and water current speed, and will be helpful in our tidal water research projects." Our thanks to the Cohoke Club! □

Quail Study Underway

As most quail hunters can personally attest, Virginia bobwhite populations have declined dramatically in recent years, and VDGIF wants to know why. According to hunter surveys conducted by VDGIF, the total number of quail bagged by Virginia sportsmen has declined from almost 1.2 million birds in 1968 to fewer than 200,000 in 1989, a decrease of 84 percent. The factors contributing to this decline are many, the most important of which may be the loss of suitable nesting and brood range habitat. Recruitment of juvenile quail during the spring and summer months is the primary determinant of fall population levels. During years when nesting success is poor, fall populations will be low.

Despite the importance of this stage of the quail's life cycle, very little is known concerning nest success and brood survival in Virginia. A nesting study has never been conducted in Virginia, and quail wing data that is currently collected from hunter-killed birds provide only general information regarding reproductive performance. Research is needed to better understand the variables affecting breeding success.

An ambitious project to study the nesting and brood ecology of quail in Virginia began in February of this year. The primary purpose is to determine nest success, brood survival, and hatching chronology of bobwhites in Virginia. Special effort

is being made to identify the factors responsible for nest failure and brood mortality, with particular emphasis on the effect of predators on quail populations during the nesting season. We are characterizing and comparing the habitat of successful and unsuccessful nests.

The research project is expected to take three years to complete. Quail are captured in baited walk-in funnel traps during late winter and early spring. Captured hens are then fitted with radio transmitters and monitored intensively. During the first year, radios will be placed on 20 hens; during the following two years, we will attempt to radio 100 hens per year. Transmitters will be equipped with mortality sensors so that carcasses of dead quail can be recovered as soon as possible after death.

After hatching, broods will be followed to determine habitat use patterns. Brood survival will be estimated by comparing the number of birds fledged with the number initially hatched.

Information obtained from this study will enable land managers to manage quail populations more efficiently. Only by understanding the problems experienced by nesting quail in Virginia can we make meaningful recommendations to improve reproductive success.

Several Quail Unlimited chapters have already pledged financial support, including the Central Virginia, South Central, and Monticello Chapters. But, additional funds are desperately needed. If you would like to help, you can contribute through your local Quail Unlimited chapter, or by contacting Project Leader Mike Fies at the VDGIF office in Verona (703/248-9390).

Disabled Game Warden Needs Help

While working spotlighting on October 19, 1979, Virginia Game Warden and NRA Hunter Safety Instructor Dwight Campbell was shot at close range with two blasts from buckshot and seriously wounded. At the young age of 32, Dwight became disabled by a poacher and has

since suffered a liver transplant.

Dwight Campbell now faces an \$80,000 hospital bill and \$500 in monthly medication costs. For the life-long sacrifice Dwight Campbell has made while enforcing Virginia's game laws to protect wildlife in this state, his friends and family are hoping that others can reach out and assist him in overcoming his staggering financial burden.

Donations can be sent to: Dwight Campbell Liver Transplant Fund, c/o Jefferson National Bank, P.O. Box 767, Luray, VA 22835.



Bass Fishing Simplified, by Bob Gooch. Atlantic Publishing Company. 1993. 154 pps. \$10.95 softcover.

(SIM-PLI-FIED): to make simple or simpler: reduce to basic essentials.

It seems that the smarter we get, the more complicated we make things, from new cars with operating manuals that compare in size to great novels, down to the things we do for relaxation—like fishing. Bob Gooch, realizing that maybe, just maybe, we really don't need a \$20,000 bass boat, ultra-sensitive fish locating device, and five fishing rods made out of space-age materials, has written a book that reminds us why we really like to fish.

Gooch, who has been around since the early days of sport fishing, has used his knowledge and hands-on experience to guide the novice angler to the fun and thrill in the sport of fishing for bass.

The worth of this book is as the title reads, *simplified*. Bob reminds the reader throughout that unless you have just won the lottery, fishing need not cost an arm and a leg. Rods, reels, fishing line, bait, tackle, and where-to-go are all covered in detail in these pages. With a little bit of history, and most importantly, his own personal experience as to what works best, this book is just the

teaching tool for someone getting started in bass fishing, or looking to improve angling skills. Even if you're an expert, I'm sure after reading this little book, you will find or simply be reminded of some of the little things that drew you to the sport in the first place.

So, before you buy that next fishing lure, or sign your life away on the latest fad or craze to hit the angling world, take a tip from Gooch: keep it simple and stick to the basics.—Lee Walker

Freshwater Fishes of Virginia, by Robert E. Jenkins and Noel M. Burkhead. American Fisheries Society, 1994. 1100 pages. \$85 hardcover.

How many freshwater fish species live in Virginia? Which species have been around since the dinosaurs? How does a bluespotted sunfish reproduce? Where would you find a rainbow trout? Which of the 45 species or subspecies within Virginia are on the decline? The answers to these questions and more can be found in *Freshwater Fishes of Virginia*.

The authors have dedicated much of their careers to the task of assimilating life history, taxonomic, and distributional information on the freshwater fishes of Virginia. Early and current literature, museum records, recent survey, and distributional data from over 10,000 collections are used to compile the most comprehensive information ever assembled of Virginia's freshwater fishes. Conservation is an underlying theme of this book, and the authors hope that this exhaustive treatment of the biology, habitat, and distribution of Virginia's fishes will contribute to their restoration and protection.

Abundant illustrations, detailed keys, distribution maps, and 40 pages of color plates make this a monumental reference and invaluable source of information for anyone who is curious about Virginia's remarkable freshwater fishes. Order your copy from the Virginia Chapter, American Fisheries Society, c/o VDGIF P.O. Box 996, Verona, VA 24482.

The Reptiles of Virginia, by Joseph C. Mitchell. Smithsonian Institution Press 1994. 384 pps. \$40 hardcover.

"Virginia has a rich cultural history," wrote Roger Conant of the University of New Mexico in his foreword to *The Reptiles of Virginia*, "yet in more than 350 years since colonization, its flora and fauna have not been fully described and studied. This book fills that void, at least for reptiles...The results chronicled here are of encyclopedic depth."

Indeed, this book offers the first complete catalogue of the reptiles of Virginia, from the sea turtles of the Atlantic coast to the snakes, turtles, and lizards of the piedmont and Blue Ridge Mountains.

Including 63 color plates of numerous habitats and 32 species, distribution maps for each species, easy-to-use keys for quick identification (with a separate key for young snakes), *The Reptiles of Virginia* is a practical resource for understanding these species and their habitats. The book yields a wealth of new information on the ecology, life histories, and biogeography of reptiles in the state.

Each of the 62 individual species descriptions provides local common names, the historical context for scientific names, present habitat affinities, and information about geographic variation in color pattern, and morphology, as well as reproduction, predators, and prey. The book also explores the human impact on Virginia's natural habitats and species' distribution patterns, presenting a historical perspective on the conservation of these animals. A separate chapter provides a summary of snakebite epidemiology and suggestions for preventing snakebites.

The Reptiles of Virginia is an informative tool for amateur and professional herpetologists, naturalists, and science teachers. Order your copy by sending a check for \$42.25 (includes shipping) to the Smithsonian Institution Press, Blue Ridge Summit, PA 17294-0900. Charge orders can be made by calling 1-800-782-4612. □



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Support Virginia's Nongame and Endangered Species program by wearing one of our brand-new beautiful t-shirts! Only \$12 each (plus \$2.50 postage and handling), they're available in medium, large, and extra large only. Send your order in with a check for \$14.50 (for each t-shirt ordered) made out to the Treasurer of Virginia to: T-Shirt Offer, VDGIF, Attn: Toni Harrison, P.O. Box 11104, Richmond, VA 23230-1104.

By Joan Cone

Cook Your Meal Outdoors

Barbecuing on the backyard patio is fun, and the enticing aroma of foods cooking over hot coals is hard to resist. From appetizers to main courses, to desserts, everything tastes just great cooked outdoors!

Aluminum foil is a versatile tool to use when barbecuing. Foil is made easily into cooking containers for the grill. It also allows you to cook side dishes along with your meat or fish.

Grilling fish on the barbecue can be a problem, as fish tends to be fragile and break up when fully cooked. This can be avoided by wrapping and cooking fish in aluminum foil.

MENU

Gazpacho Fish Bundles
Sour Cream Dill Potato Salad
Mushroom Packets
Bananas Foster
Chocolate Nut Meringues

Gazpacho Fish Bundles

Bass, catfish, bluefish or sea trout fillets are excellent with this recipe.

1 pound fish fillets
 ½ envelope spaghetti sauce mix
 2 tablespoons vinegar
 1 tablespoon vegetable oil
 1 medium tomato, chopped
 ¼ cup chopped, peeled cucumber

Tear off 3 pieces of heavy duty aluminum foil. Arrange 1 portion of fish fillet on each piece of foil. Stir together spaghetti sauce mix, vinegar, oil, tomatoes and cucumber. Place a generous spoonful of mixture on each serving of fish. Bring foil up over fish, folding edges in a series of double folds. Seal both ends with double fold. Place bundles on grill 3 to 4 inches above medium hot coals. Cook 15 to 20 minutes, turning once, or until fish flakes easily when tested with a fork. Serves 3.

Sour Cream Dill Potato Salad

1 cup sour cream
 ½ cup mayonnaise
 3 tablespoons vinegar
 Salt and pepper to taste
 1 teaspoon dill weed
 4 cups sliced, cooked new potatoes
 1 cup thinly sliced celery
 3 hard-cooked eggs, sliced

In a mixing bowl, combine sour cream, mayonnaise, vinegar, salt, pepper and dill weed; mix well. In a mixing bowl, combine potatoes, celery and eggs. Add sour cream mixture and toss lightly. Chill several hours to blend flavors. Makes about 5 cups.

Mushroom Packets

1 pound mushrooms, sliced
 1 tablespoon lemon juice
 ¼ cup margarine or butter, melted
 2 teaspoons parsley flakes
 ½ teaspoon each thyme and marjoram
 Salt and pepper to taste
 3 to 5 green onions, chopped

In a mixing bowl, with fork, toss mushrooms with lemon juice. Add remaining ingredients; toss until well combined. Divide mix in half on two large double sheets of aluminum foil. Carefully fold and seal foil around mushrooms to form packets, using double folds. Place packets on grill 3 to 4 inches above medium hot coals and cook for 15 minutes or until mushrooms are tender. Makes 4 servings.

Bananas Foster

After removing fish and mushrooms, place the banana dessert on your grill.

3 medium bananas
 ¼ cup margarine or butter
 ¼ cup brown sugar, firmly packed
 2 teaspoons rum extract
 ¼ teaspoon ground cinnamon
 Vanilla ice cream

Slice bananas in half lengthwise and crosswise. Place bananas in the center of a square of heavy duty aluminum foil large enough to permit adequate wrapping. Dot with butter; sprinkle with brown sugar, rum extract and cinnamon. Bring 4 corners up together in a pyramid shape. Fold the openings together loosely to allow for heat circulation and expansion. Seal by folding over ends and pressing to the package. Place bundle on grill 3 to 4 inches above medium hot coals and grill for 15 to 20 minutes or until bananas are tender. To serve, spoon into serving dishes; top with ice cream. Serves 3 to 4.

*Chocolate Nut Meringues

Vegetable cooking spray
 2 egg whites
 ⅛ teaspoon cream of tartar
 ½ cup superfine sugar
 1 teaspoon vanilla extract
 ¾ cup semisweet chocolate chips, finely chopped
 ½ cup finely chopped nuts, almonds, walnuts and/or pecans

Preheat oven to 275°. Line 2 cookie sheets with foil and lightly coat foil with vegetable cooking spray. In a medium bowl, beat egg whites and cream of tartar with an electric mixer on medium speed until soft peaks form. Turn mixer to high and gradually beat in sugar until glossy, stiff peaks form. Beat in vanilla. Gently but quickly fold in chocolate and nuts. Drop by teaspoonfuls 1 inch apart onto prepared cookie sheets. Bake 25 minutes. Reduce heat to 250° and bake 25 minutes longer. Remove to a rack and let cool completely before storing in an air-tight tin. Makes about 42. □

*Recipe from *365 Great Cookies & Brownies*, by Hayes and Leblang, published by HarperCollins, September, 1993.

Photo TipS

By Lynda Richardson

I was on the prowl for tigers. Squatting behind my sturdy tripod and telephoto lens, I sat in the middle of a grassy field. The morning sun warmed the ground enough that a light wind began to kick around scattered groupings of flowers dotting the field. But the breeze proved a little unnerving. As I made slow 360 degree scans, every movement caught my eye. Soon, I was clutching my camera for fear of being caught off guard. There was no telling from which direction one might appear. They were so silent. I had to be ready...ready or else.

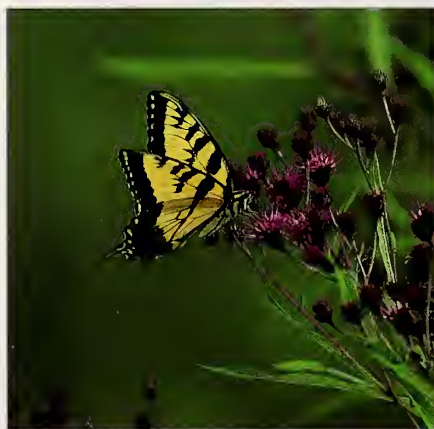
Suddenly, there was a flicker of yellow moving quickly through the tall grass. Swinging my lens in that direction, I saw the telltale black stripes. Now watching through the viewfinder, I waited for my quarry to pause and press its long black nose into a colorful bud. But, before I could get the shot, another movement caught my attention. Looking up from the camera, I realized I was surrounded. Tigers were everywhere darting in and out of the waving grasses.

I tried to remain calm by concentrating on different individuals and studying their behavior. I watched for particularly splendid specimens, noting one old fellow who had somehow lost a bit of his tail. Finally, when it looked like I had been accepted by the circling group, I stood up and started shooting. Unconcerned, beautiful tiger swallowtail butterflies floated by, gliding from flower to flower.

When photographing butterflies, I've usually turned to my 100mm macro lens for the task. A macro lens is light and easily carried in the field. But with a macro you have to be able to get fairly close to your subject. My Canon 100mm f4.0 macro fully

extended will capture half lifesize and give me 18 inches of working room or distance from my subject. Eighteen inches of working room is great if your subject is a dew-covered, jewel-like insect glistening in the pre-dawn sun. But if your subject has already warmed up for a flighty jog around the field, your trusty macro might become a hindrance rather than a help.

Once butterflies have warmed up, they aren't waiting around for anyone to get close enough to set up a tripod, compose the shot and focus. That's why I started pho-



Tiger swallowtail; photo by Lynda Richardson.

tographing butterflies with telephoto lenses. A telephoto lens affords you more space between you and your subject. With my 200mm f2.8 internal focusing lens, my minimum focusing distance to a subject is about 4½ feet. When photographing a butterfly with a 3¾-inch wing span, I am able to capture an image

on film of that butterfly at a little more than 1/8 of its life size or .18X. With my 300mm f4.0 and 400mm f4.5 lenses, I have a working minimum focal distance of about 10 feet and 12½ feet respectively and both lenses will capture an image approximately 1/8 (.12X) its life size.

But what if you want to fill the frame with your buggy subject? Just make your lens focus closer with the addition of an extension tube or two. An extension tube is merely a glassless tube which fits between your camera body and telephoto (or macro) lens. With the manual focusing Canon cameras these tubes come in two types: automatic and manual. The automatic version has a mechanism which allows it to stop down automatically and, of course, the manual does not. By adding a 25mm or 50mm extension tube or even combining the two, you can achieve up to a bit over half life size with your telephoto.

With the new autofocus cameras, Canon makes a 25mm extension tube designed to work with a 50mm lens but it can also be used with a telephoto lenses.

For ease of comparison, check out the chart below. Please note that distances and life size ratios are approximate for these three Canon manual, internal focusing lenses.

The next time you decide to photograph butterflies or any other critter you would normally photograph with a macro lens, pull out your telephoto and give it a try. Stalking tigers in the grass was never so easy!

Lens	min. focus	w/25mm tube	w/50mm tube	w/tubes combined
200mm	4 ft. 6 in.	3 ft.	2 ft. 9½ in.	2 ft. 6 in.
Lifesize	.18X (>1/5)	.34X (1/3)	.48X (<1/2)	.64X (>1/2)
300mm	10 ft.	6 ft. 2 in.	5 ft.	4 ft. 6 in.
Lifesize	.11X (<1/8)	.23X (<1/4)	.33X (1/3)	.45X (<1/2)
400mm	12 ft. 6 in.	8 ft. 10 in.	7 ft. 6 in.	6 ft. 6 in.
Lifesize	.12X (1/8)	.20X (<1/4)	.28X (>1/4)	.37X (>1/3)



by Col. William Antozzi, Boating Safety Officer

Lightning Does Hit Boats

I have written several articles about lightning. I have warned boaters about the severity of lightning strikes and have provided suggestions to guard against injury or death during thunderstorms. I have never provided detailed stories or examples of such strikes because I did not encounter actual victims until a short time ago.

The disastrous results of lightning strikes were recently brought to my attention in an account by P/C Bob Baer of the St. Lucie River, Florida, U.S. Power Squadron. Bob's tale is enough to make a boater's hair stand on end. He shares the stories this way:

The first lightning strike was south of Pittsburgh, Pennsylvania, on the Monongahela River one hot summer day. We were headed to a squadron rendezvous at Ten Mile Creek, and the weather had been threatening all morning. As we approached Denora Bridge in our Trojan express cruiser, the sky was black. Suddenly, there was an ear-splitting crash and a scream from the mate, who found herself clinging to the galley trying to get her bearings. She had been checking the window in the head for a rainwater leak when lightning hit and destroyed our 12-foot AM radio antenna. The antenna base was just outside the window, so she saw a flash, the vanity mirror blew off the wall, and her reflexes deposited her in the galley, shaken but unharmed.

Outside, the top five feet of the antenna vaporized in a puff of red smoke, while the lower portion split open and

hung partly over the rail in shreds. The motor kept running, but the next morning the battery was dead because the damaged spark suppression condensers had shorted it out.

The bridge roof was badly burned from charred wiring. All running lights were burned out, and strangely, we found later, while swimming under the boat, that all of the copper bottom paint was missing and the area around the ground plate was charred black.

Of course, we said goodbye to the AM

power. As we passed under the transmission lines from the Hutchinson Island Atomic power plant, we noticed the breeze picking up and a big thunderhead astern and approaching fast.

There was no place to hide; we were in a dredged cut that was miles long, but luckily there was no traffic. As big drops of rain began to fall, I put down a bow anchor and, a few seconds later, had grounding chains, made for this purpose, clipped to the mast shrouds with the eight-foot long sections of chain hanging in the water on both sides of the bow.

I had only taken shelter in the cabin for a few minutes when there was a flash followed by a deafening crash of thunder and accompanied by what could be best described as a ball of fire traveling across the cabin ceiling from the base of the mast to the VHF radio.

As soon as the rain stopped, we went on deck to assess the damage and found it covered with pieces of fiberglass from the destroyed mast-top antenna and pieces of red ceramic from what remained of the backstay insulators. I hauled up the two grounding chains and found that the galvanizing was gone

from the submerged portion of both chains, and the fiberglass hull had a black coating on both sides of the bow, probably vaporized zinc oxide.

An acid wash took care of the hull, but no one wanted to repair the radio, so I replaced it. The boatyard replaced the backstay insulators, the radio antenna and rewired the mast, which had also sustained damage. □



Lightning is a very real danger while boating during the summer in Virginia. Take precautions and do not underestimate the power of Mother Nature; photo by F. Eugene Hester.

radio and soon had a new VHF and antenna. And needless to say, we were the hit of the rendezvous, especially since lightning strikes in river valleys surrounded by high hills are rather uncommon.

The second experience, even though it was in lightning territory, resulted in much less damage. We were traveling north on the Indian River near Stuart, Florida, aboard a 35-foot sloop under



Maslowski photo

Want to know when the witch hazel blooms or ruffed grouse begin to nest? How about when striped bass run up the Staunton River or hawk migration peaks on the Blue Ridge?

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